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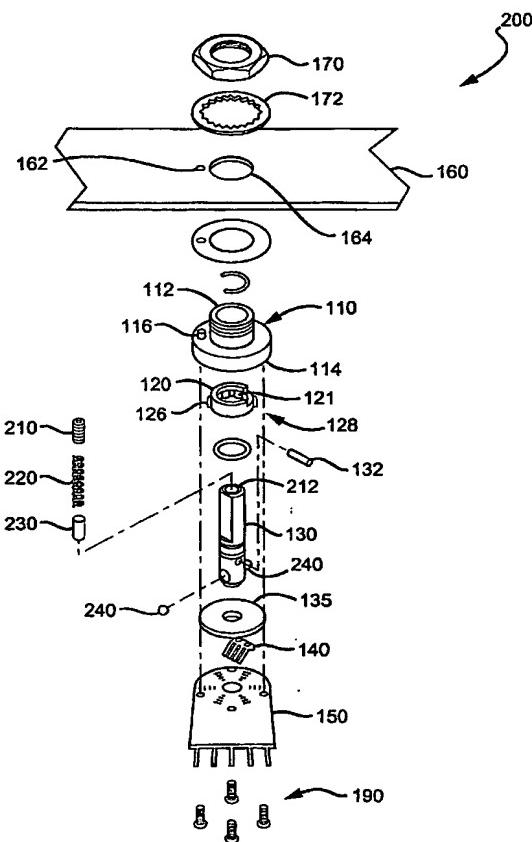
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- (71) Applicant (for all designated States except US): MICRO
TEL INTERNATIONAL [US/US]; 9485 Haven Avenue,
Suite 100, Rancho Cucamonga, CA 91730 (US).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): HORTON, Donald
[US/US]; 8134 Glade Avenue, Canoga Park, CA 91304
(US). MILLER, William [US/US]; 1684 N. Hale Avenue,
Fullerton, CA 92831 (US).
- (74) Agents: RUTAN & TUCKER LLP et al.; 611 Anton
Blvd., Suite 1400, Costa Mesa, CA 92626 (US).
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[Continued on next page]

(54) Title: LOW PROFILE ROTARY SWITCH WITH DETENT IN THE BUSHING



(57) Abstract: A panel mounted low profile rotary switch (100) contains a detent mechanism (120) mounted in a bushing (110). In a preferred class of embodiments, the detent sub-assembly comprises a single spring (220) positioned in parallel within the vertical extending shaft (130). The force exerted by the spring is manually adjusted by a set screw (210) to provide the desired downward applied vertical force on a plunger (230). The plunger, preferably a pointed cylinder, applies pressure to detent balls (240) causing the detent balls to move radially outward and engage rotor cams located on the inner surface of the detent mechanism.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/22523

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H01H 19/00,21/00; G05G 5/00
US CL : 200/296,336; 74/527

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 200/11r,11d,11da,11g,295,296,335-337,53-574; 74/527

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,551,587 A (ROSE) 05 November 1988 (05.11.1988) Note detent subassembly 22-25 in Fig. 1 and panel 2 located between lower portion 5,6 and upper portion 4 of housing or bushing component 1 in figure 2. Note column 1, line 60 to column 3, line 28.	1,4,5,6;12-14
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Y	US 6,043,855 A (GRAVE) 28 March 2000 (28.03.2000) Figure 2, knob 105.	2
A	US 4,112,282 A (PIBER) 05 September 1978 (05.09.1978) Bushing 12, upper portion 36,32; panel 52; bushing lower portion 12,12a noting figures 6-11. and column 5, line 5 to column 6, line 64.	1-14
Y	US 3,560,672 A (LUDLUM et al) 02 February 1971 (02.02.1971) Rotary switch shaft 14 with attached knob 92,94 noting figures 1 and 2.	2
A	US 5,862,715 (LEMIRE) 26 January 1999 (26.01.1999) Vertical spring 124,154,188,260 of the detent assembly located in bore parallel to the shaft.	1-14
A	US 4,490,588 A (GUENTHER et al) 25 December 1984 (25.12.1984) Detent assembly 11,15-17 and bushing 2 noting figure 2.	1-14

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

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Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703)305-3230

Authorized officer
James R Scott
Telephone No. 703-308-1782

Diane Smith *fr*

INTERNATIONAL SEARCH REPORT

PCT/US03/22523

Continuation of Item 4 of the first sheet:

The title does clearly described the focal point of the invention. The suggested new title is as follows:

--ROTARY SWITCH WITH MANUALLY ADJUSTABLE DETENT MECHANISM WITHIN THE BUSHING INCLUDING VERTICAL SPRING, PLUNGER AND DETENT BALLS--